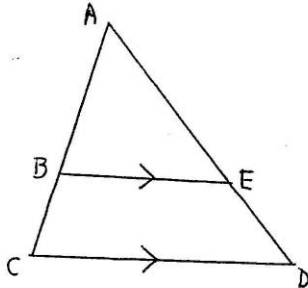


Name: \_\_\_\_\_ Date: \_\_\_\_\_

### PROPORTIONALITY RULES

**SIDE-SPLITTING THEOREM** - If a line is Parallel to one side of a triangle and intersects the other two sides, then it divides those 2 sides proportionally.

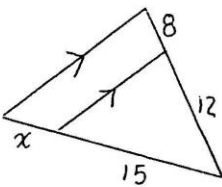


$$\frac{AB}{BC} = \frac{AE}{ED}$$

or

$$\frac{\text{TopLeft}}{\text{BottomLeft}} = \frac{\text{TopRight}}{\text{BottomRight}}$$

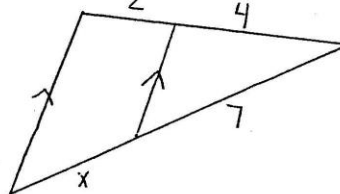
EX #1: Find  $x$ .



$$\frac{12}{8} = \frac{15}{x}$$

$$x=10$$

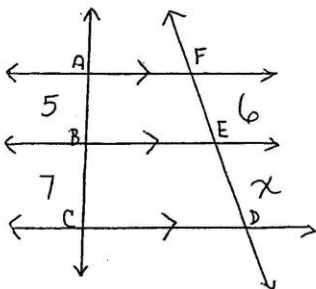
EX #2: Find  $x$ .



$$\frac{4}{2} = \frac{7}{x}$$

$$x=3.5$$

**TWO TRANSVERSAL PROPORTIONALITY THEOREM** - If 3 or more Parallel lines are intersected by two transversals, the parallel lines divide the transversals Proportionally.



$$\frac{AB}{BC} = \frac{FE}{ED}$$

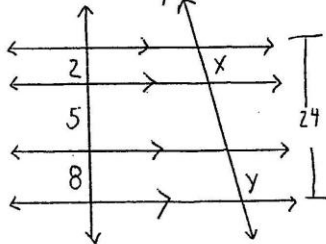
or

$$\frac{\text{TopLeft}}{\text{BottomLeft}} = \frac{\text{TopRight}}{\text{BottomRight}}$$

$$\frac{5}{7} = \frac{6}{x}$$

$$x=8.4$$

EX #1: Find  $x$  &  $y$ .



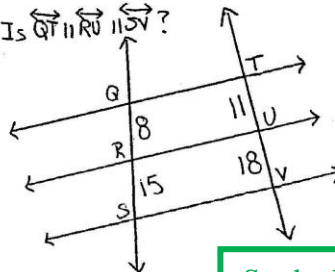
$$\frac{2}{13} = \frac{x}{(24-x)}$$

$$x=3.2$$

$$\frac{5}{8} = \frac{20.8-y}{y}$$

$$y=12.8$$

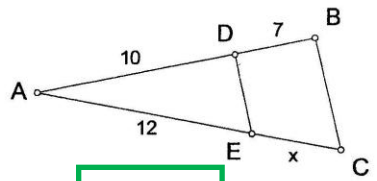
EX #2: Is  $\overleftrightarrow{QT} \parallel \overleftrightarrow{RV}$ ?



$$\frac{8}{15} \neq \frac{11}{18}$$

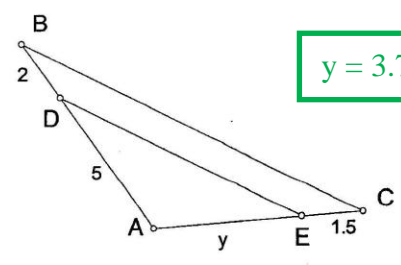
So the lines are not Parallel

1)



$x = 8.4$

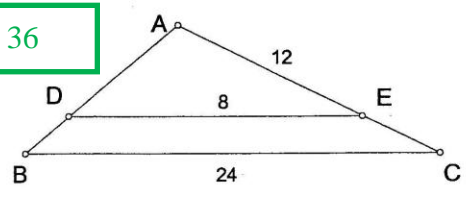
2)



$y = 3.75$

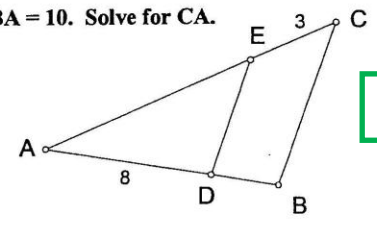
3) Solve for AC.

$AC = 36$



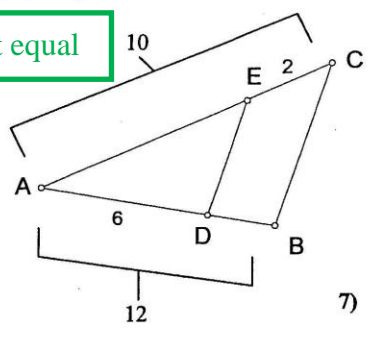
4) BA = 10. Solve for CA.

$CA = 15\text{cm}$

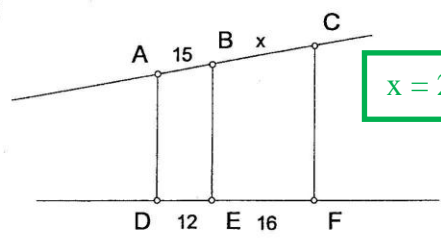


5) Is  $ED \parallel CB$ ?

NO, ratios not equal

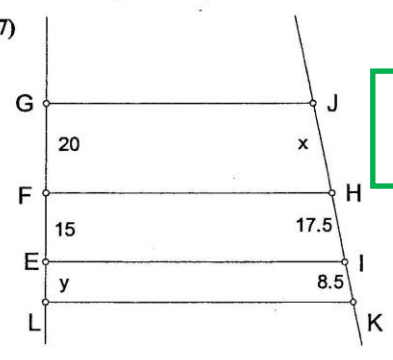


6)



$x = 20$

7)

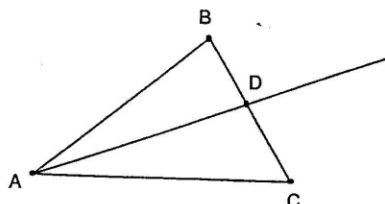


$x = 23 \frac{1}{3}$   
 $y = 7.29$

Name: \_\_\_\_\_

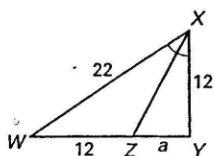
Date: \_\_\_\_\_

**Theorem:** If a ray bisects an angle of a triangle then it divides the opposite side into segments whose lengths are proportional to the lengths of the other 2 sides.



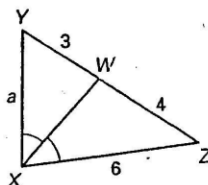
$$\frac{AC}{CD} = \frac{AB}{BD}$$

Find the value of each variable.

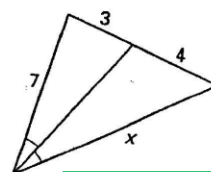


$$\frac{22}{12} = \frac{12}{a}$$

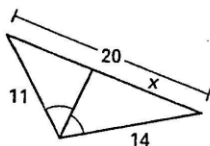
$$a = 6\frac{6}{11}$$



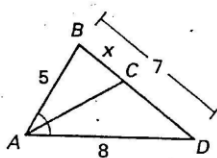
$$a = 4.5$$



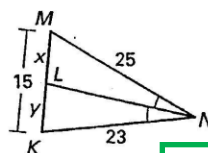
$$x = 9\frac{1}{3}$$



$$x = 11.2$$



$$x = 35/13$$



$$x = 7.8125$$

$$y = 7.1875$$